SoftMotion: DriveInterface: ServoStar

Last update: 16.04.2007

Hardware interface	CAN; must support 3S_CANdrv.lib
Supported drives	ServoStar600, ServoStar400 (Danaher Kollmorgen Seidel)
Runtimes	x86
Author	Hilmar Panzer
Components	ServostarDrive.lib; 3S_CanDrv.lib; SM_CAN.lib; SysLibCallback.lib; SysLibFile.lib
Version	1.9.3.0

CONTENT

1 Parameters in PLC config

1.1 BusInterface

wParam1	Not used
wParam2	Not used
dwParam1	Not used
dwParam2	Not used

1.2 AxisGroup

wParam1	CAN channel No (typically 0)
wParam2	Baudrate in kBit (125, 250, 500, 1000)
wParam3	SYNC generator: 0: PLC generates SYNC (only possible if PLC is highly precise); 2: SYNC device generates SYNC (additional hardware needed)
wParam4	Not used
dwParam1	Reserved
dwParam2	Reserved
dwParam3	Not used
dwParam4	Reserved

1.3 supported Drive.wControlType

T / - no	V/V yes	V/P yes	P/P yes	PV/PV yes	V/- yes	CONF yes

The cyclically sent/received data can consist of: fSet/ActPosition, fSet/ActVelocity, fSetCurrent.

1.4 Additional structure *ServoStar_AXIS_REF*

Name	***Type***	***Description***
byHomingDelay	Byte	Internal use: delays switching back from homing mode
strConfigFile	STRING	full name and path of config file
Acit		internal use
byOperatingMode	BYTE	internal use: operation mode
wServoStarType	WORD	type of servostar (600/400)
crap		Internal use
pParameterlist		Internal use
wOldControl	WORD	Internal use
byOldOpMode	BYTE	Internal use
wControlWord	WORD	Control word (6040)
wStatusWord	WORD	Status word (6041)
wDRVSTATlw	WORD	Low word of DRVSTAT

1.5 Firmware and configuration possibilities

The driver was implemented and tested on firmware version V7.12.

Because some problems could occur with former software versions, there are some possibilities to adapt some parameters. The following global variables must be set during the first cycle of the application:

g_uiWaitTimeAfterSYNCus	Minimum time (µs), between sending the SYNC and the first PDO	500
g_byServostarSYNCSOURCE	Parameter SYNCSORC*	3
g_byServostarFPGA	Parameter FPGA*	3

* normally the drive should work with SYNCSRC 3 and FPGA 3, when controlled via CAN. Former firmware versions had some problems when running in this mode. Then it could help to set these values to 0.

2 Features

- **RegulatorOn, DriveStart**
- Detecting and acknowledging **errors**
- **reading/writing** SoftMotion and **drive parameters** (to access index 0xaabb subindex 0xcc with length 0xdd in byte (only necessary for writing) use MC_Read/Write(Bool)Parameter with parameter number -16#ddaabbcc)
- any **gearing factors** (dwRatioTechUnitsDenom/iRatioTechUnitsNum)
- **linear/rotary axes**
- drive internal **homing** (configure with object 0x6098 etc. or via ASCII commands NREF/DREF)
- **limit switches**
- 32-Bit **latching** (only possible after homing): 1 channel; digital input must be defined
- **configuration from file**
- **configuration from dialogs in PLC configuration**
- **controlling modes (SMC_SetControllerMode)**: position, velocity, current (switch regulator off before switching them)
- supported **SYNC generators** (to be set in PLC Configuration, AxisGroup) : PLC, SYNC-Device

3 CAN-Traffic

base load:

Telegram	*Data bytes*	*Bit length*	*125 kBit/s*	*250 kBit/s*	*500 kBit/s*	*1 MBit/s*
SYNC	0	47	0,376 ms	0,188 ms	0,094 ms	0,047 ms
SDO	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
overall			1,264 ms	0,632 ms	0,316 ms	0,158ms

per drive:

Telegram	*Data bytes*	*Bit length*	*125 kBit/s*	*250 kBit/s*	*500 kBit/s*	*1 MBit/s*
Control word and operation mode	3	71	0,568 ms	0,284 ms	0,142 ms	0,071 ms
SetPosition/SetVelocity/SetCurrent	4	79	0,632 ms	0,316 ms	0,158 ms	0,079 ms
Status word and actual position	8	111	0,888 ms	0,444 ms	0,222 ms	0,111 ms
optional: actual velocity	3	71	0,568 ms	0,284 ms	0,142 ms	0,071 ms
overall (no actual velocity)			2,656 ms	1,328 ms	0,664 ms	0,332 ms
overall (with actual velocity)			3,288 ms	1,644 ms	0,822 ms	0,411 ms

With/Without receiving the actual velocity, and with one SDO reserve it is possible to control n drives:

Cycle time [ms]	125 kBit/s	250 kBit/s	500 kBit/s	1 MBit/s
1	0/0	0/0	1/1	2/2
2	0/0	1/1	2/2	4/5
3	0/1	1/1	3/4	6/8
4	1/1	2/2	4/5	9/11
5	1/1	2/3	5/7	10/13
8	2/2	4/5	9/11	18/23